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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 09/437,226 | 11/10/1999 | JOHN S. TULLOCH | 540-161 | 7673 |

7590 09/13/2002

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EXAMINER

PATEL, PARESH H

ART UNIT

PAPER NUMBER

2829

DATE MAILED: 09/13/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | |
|------------------------------|-----------------|----------------|
| Office Action Summary | Application No. | Applicant(s) |
| | 09/437,226 | TULLOCH ET AL. |
| | Examiner | Art Unit |
| | Paresh Patel | 2829 |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) Responsive to communication(s) filed on 26 June 2002.

2a) This action is FINAL. 2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) Claim(s) 1-25 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5) Claim(s) _____ is/are allowed.

6) Claim(s) 1-25 is/are rejected.

7) Claim(s) _____ is/are objected to.

8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on _____ is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11) The proposed drawing correction filed on 12 July 2001 is: a) approved b) disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.

12) The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All b) Some * c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. _____.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) The translation of the foreign language provisional application has been received.

15) Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) Notice of References Cited (PTO-892) 4) Interview Summary (PTO-413) Paper No(s). _____.

2) Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) Notice of Informal Patent Application (PTO-152)

3) Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) Other: _____

DETAILED ACTION

Response to Arguments

In view of the appeal brief filed on 06/26/2002, PROSECUTION IS HEREBY REOPENED. A new ground of rejection is set forth below.

To avoid abandonment of the application, appellant must exercise one of the following two options:

(1) file a reply under 37 CFR 1.111 (if this Office action is non-final) or a reply under 37 CFR 1.113 (if this Office action is final); or,

(2) request reinstatement of the appeal.

If reinstatement of the appeal is requested, such request must be accompanied by a supplemental appeal brief, but no new amendments, affidavits (37 CFR 1.130, 1.131 or 1.132) or other evidence are permitted. See 37 CFR 1.193(b)(2).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-2, 4-7, 12-14 and 16-25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Cahill et al. (Aircraft Electrical We-Wire Arc Tracking) in view of Ogura et al. (Development of thermographic NDT for the damage inspection in carbon fiber reinforced plastics).

Regarding claim 1, Cahill et al. (hereafter Cahill) discloses: a method for inspecting the integrity of insulation of an insulated wire or cable [see abstract on page 1] including the steps of; passing a current [lines 13-14 of Experimental Test Setup on page 2 and fig. 2] through said wire or cable [lines 1-11 of Experimental Test Setup on page 2], applying a fluid having electrolytic properties [lines 14-23 of Experimental Test Setup on page 2] to said wire or cable.

Cahill discloses in fig. 2 a method for inspecting the integrity of insulation of an insulated wire or cable. Cahill does not explicitly disclose, using a thermal imaging system to detect and display the intensity of heat emanating from said wire or cable. However, Cahill discloses measurement of temperature of surface discharge of wire [see Background on page 1 and fig. 16-17 on page 17]. Ogura et al. (hereafter Ogura) discloses use of a thermal imaging system to detect and display the intensity of heat emanating from insulated wire or cable [fig. 1-2 and lines 9-17 on page 422]. Therefore, it would have been obvious to a person having ordinary skill in the art at the time of the invention to modify the a method for inspecting the integrity of insulation of Cahill by using thermal image system as taught by Ogura for the purpose of identifying the flaws and defects in the insulated wire or cable from a temperature distribution on a surface of an insulation [see introduction on page 420].

Regarding claim 2, Ogura discloses: the thermal imaging system comprises an infra-red detector [camera of fig. 2] and a display monitor [monitor of fig. 2].

Regarding claim 4, Ogura discloses: the infra-red detector is a thermal imaging camera [camera of fig. 2].

Regarding claim 5, Ogura discloses: the infra-red detector is hand held [inherent to fig. 2 and thermographic NDT].

Regarding claim 6, Ogura discloses: the infra-red detector is stand mounted [inherent to fig. 2 and thermographic NDT].

Regarding claim 7, Ogura discloses: the infra-red detector is capable of detecting temperature changes of less than 0.5 degree C [inherent to fig. 4 and lines 18-29].

Regarding claim 12, Cahill discloses: said fluid is capable of conducting a leakage current [second paragraph of Experimental Test Setup on page 2].

Regarding claim 13, Cahill discloses: leakage current measuring means [circuit breaker of fig. 1-9] and on page 5] are provided to measure said leakage current.

Regarding claim 14, Cahill discloses the leakage current measuring means (ammeter) [see tables 2-4 and page 2].

Regarding claim 16, Cahill discloses: said fluid is an aqueous saline solution [ocean water salt of page 2].

Regarding claim 17, Cahill discloses: said fluid comprises sodium chloride in the range 1 to 3% by mass [salt of page 2].

Regarding claim 18, Cahill and Ogura does not explicitly discloses said fluid comprises 2% sodium chloride by mass. However, Cahill discloses 4% salts contacts with ocean water as electrolyte fluid [see page 2]. It would have been obvious to a person having ordinary skill in the art at the time the invention was made to use fluid with 2% sodium chloride by mass, since it has been held that where the general

conditions of a claim are disclosed in the prior art, discovering the optimum or workable ranges involves only routine skill in the art. *In re Aller*, 105 USPQ 233.

Regarding claim 19, Cahill discloses said fluid comprises ammonium chloride in the range 1 to 3% by mass [blue fluid of page 2].

Regarding claim 20, Cahill discloses: said fluid is dripped on to the wire or cable [drip rate on page 2].

Regarding claim 21, Cahill discloses: said fluid is sprayed on to the wire or cable [water salt spray of page 2].

Regarding claim 22, Cahill discloses: said fluid includes a wetting agent [water of page 2], said wetting agent being capable of reducing the surface tension of the fluid and thereby preventing large droplets from forming.

Regarding claim 23, Cahill discloses: said fluid is non-corrosive [blue flush fluid used in air craft as disclosed on page 2] and is of a type that causes no substantial degradation of elastomeric polymer insulation around any wires or cables to which it is applied.

Regarding claim 24, Ogura discloses: said thermal imaging system is used to detect and display the intensity of heat emanating from the wire or cable prior to the application of said fluid, to provide datum values of heat emission [fig. 1-2].

Regarding claim 25, Cahill discloses: the amount of fluid used is dependent upon said datum values [see Effect of Electrolyte Conductivity on page 12].

Claim 15 rejected under 35 U.S.C. 103(a) as being unpatentable over Cahill and Ogura as applied to claims 14, 13, 12 and 1 above, and further in view of Marquez-Lucero et al. (US 5574377).

Regarding claim 15, Cahill and Ogura discloses the leakage current measuring means. Cahill and Ogura does not explicitly disclose said leakage current measuring means comprises an oscilloscope. Marquez-Lucero et al. (hereafter Marquez) discloses an oscilloscope [17 of fig. 9 and lines 27-31 of column 3]. It would have been obvious to one having ordinary skill in the art at the time the invention was made to modify the method for inspecting the integrity of insulation of an insulated wire or cable of Cahill and Ogura by adding oscilloscope as taught by Marquez to measure amplitude and phase values of leakage current to study an electrical characteristic of the insulation of wire or cable.

Claims 3 and 8-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogura and Cahill as applied to claim 1 above, and further in view of Piety et al. (US 5637871).

Regarding claim 3, Ogura and Cahill discloses a method for inspecting the integrity of insulation of an insulated wire or cable using a thermal imaging system to detect and display the intensity of heat emanating from said wire or cable. Ogura and Cahill does not explicitly disclose a recording means are provided for recording images displayed by the thermal imaging system. However, Piety et al. (hereafter Piety) discloses a recording means [see abstract, 52 of fig. 1 and 114 of fig. 3] are provided for recording images displayed by the thermal imaging system [50 of fig. 1 and 100 of fig.

3]. It would have been obvious to a person having ordinary skill in the art at the time the invention modify the thermal imaging system of Ogura and Cahill by adding recording means for the purpose of storing and processing the thermal images as taught by Piety to detect the defects in the sample [see lines 19-50 of column 1].

Regarding claim 8, Piety discloses: said recording means is adapted to allow displayed images to be stored on computer disks [see lines 1-6 of abstract and 252 of fig. 4].

Regarding claim 9, Piety discloses: said recording means is adapted to allow images to be stored on video tape [lines 23-36 of column 7].

Regarding claim 10, Ogura discloses: said images are displayed as calibrated spacial thermal images [see SAM and paragraph 5.2 on page 424].

Regarding claim 11, Ogura discloses: a false colour scale is used to represent various temperatures on displayed images [see SAM on page 424].

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Paresh Patel whose telephone number is 703-306-5859. The examiner can normally be reached on M-F (8:30 to 4:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Michael Sherry can be reached on 703-308-1680.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0956.

Paresh Patel
September 6, 2002



MICHAEL SHERRY
SUPERVISORY PATENT EXAMINER
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